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<10> EXELIXIS, INC.

<120> INSECT P53 TUMOR SUPPRESSOR GENES AND PROTEINS

<130> EX00-015C2

<140> 10/773,714

<141> 2004-02-05

<150> US 09/268,969

<151> 1999-03-16

<150> US 09/524,101

<151> 2000-03-13

<150> US 60/184,373

<151> 2000-02-23

<160> 35

<170> PatentIn version 3.2

<210> 1

<211> 1573

<212> DNA

<213> Drosophila melanogaster

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<211> 385
<212> PRT
<213> Drosophila melanogaster

<400> 2

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Val Glu Val Ser Gly Ser Glu Leu Thr Thr Glu Pro Met Ala Phe Leu
35 40 45

Gln Gly Leu Asn Ser Gly Asn Leu Met Gln Phe Ser Gln Gln Ser Val
50 55 60

Leu Arg Glu Met Met Leu Gln Asp Ile Gln Ile Gln Ala Asn Thr Leu
65 70 75 80

Pro Lys Leu Glu Asn His Asn Ile Gly Gly Tyr Cys Phe Ser Met Val
85 90 95

Leu Asp Glu Pro Pro Lys Ser Leu Trp Met Tyr Ser Ile Pro Leu Asn
 100 105 110

Lys Leu Tyr Ile Arg Met Asn Lys Ala Phe Asn Val Asp Val Gln Phe
 115 120 125

Lys Ser Lys Met Pro Ile Gln Pro Leu Asn Leu Arg Val Phe Leu Cys
 130 135 140

Phe Ser Asn Asp Val Ser Ala Pro Val Val Arg Cys Gln Asn His Leu
 145 150 155 160

Ser Val Glu Pro Leu Thr Ala Asn Asn Ala Lys Met Arg Glu Ser Leu
 165 170 175

Leu Arg Ser Glu Asn Pro Asn Ser Val Tyr Cys Gly Asn Ala Gln Gly
 180 185 190

Lys Gly Ile Ser Glu Arg Phe Ser Val Val Val Pro Leu Asn Met Ser
 195 200 205

Arg Ser Val Thr Arg Ser Gly Leu Thr Arg Gln Thr Leu Ala Phe Lys
 210 215 220

Phe Val Cys Gln Asn Ser Cys Ile Gly Arg Lys Glu Thr Ser Leu Val
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Phe Cys Leu Glu Lys Ala Cys Gly Asp Ile Val Gly Gln His Val Ile
 245 250 255

His Val Lys Ile Cys Thr Cys Pro Lys Arg Asp Arg Ile Gln Asp Glu
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Arg Gln Leu Asn Ser Lys Lys Arg Lys Ser Val Pro Glu Ala Ala Glu
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Glu Asp Glu Pro Ser Lys Val Arg Arg Cys Ile Ala Ile Lys Thr Glu
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Asp Thr Glu Ser Asn Asp Ser Arg Asp Cys Asp Asp Ser Ala Ala Glu
 305 310 315 320

Trp Asn Val Ser Arg Thr Pro Asp Gly Asp Tyr Arg Leu Ala Ile Thr
 325 330 335

Cys Pro Asn Lys Glu Trp Leu Leu Gln Ser Ile Glu Gly Met Ile Lys
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Glu Ala Ala Ala Glu Val Leu Arg Asn Pro Asn Gln Glu Asn Leu Arg
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 <213> Leptinotarsa decemlineata

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<210> 4
 <211> 354
 <212> PRT

<213> Leptinotarsa decemlineata

<400> 4

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Asp Glu Pro Thr Leu Asn Asp Leu Asn Tyr Ser Asn Ile Leu Asn Gly
35 40 45

Ser Ile Val Ala Asn Asp Asp Ser Lys Met Val His Leu Ile Phe Pro
50 55 60

Gly Val Gln Thr Ser Val Pro Ser Asn Asp Glu Tyr Asp Gly Pro Tyr
65 70 75 80

Glu Phe Glu Val Asp Val His Pro Thr Val Ala Lys Asn Ser Trp Val
85 90 95

Tyr Ser Thr Thr Leu Asn Lys Val Tyr Met Thr Met Gly Ser Pro Phe
100 105 110

Pro Val Asp Phe Arg Val Ser His Arg Pro Pro Asn Pro Leu Phe Ile
115 120 125

Arg Ser Thr Pro Val Tyr Ser Ala Pro Gln Phe Ala Gln Glu Cys Val
130 135 140

Tyr Arg Cys Leu Asn His Glu Phe Ser His Lys Glu Ser Asp Gly Asp
145 150 155 160

Leu Lys Glu His Ile Arg Pro His Ile Ile Arg Cys Ala Asn Gln Tyr
165 170 175

Ala Ala Tyr Leu Gly Asp Lys Ser Lys Asn Glu Arg Leu Ser Val Val
180 185 190

Ile Pro Phe Gly Ile Pro Gln Thr Gly Thr Glu Ser Val Arg Glu Ile
195 200 205

Phe Glu Phe Val Cys Lys Asn Ser Cys Pro Ser Pro Gly Met Asn Arg
210 215 220

Arg Ala Val Glu Ile Ile Phe Thr Leu Glu Asp Asn Gln Gly Thr Ile
225 230 235 240

Tyr Gly Arg Lys Thr Leu Asn Val Arg Ile Cys Ser Cys Pro Lys Arg
245 250 255

Asp Lys Glu Lys Asp Glu Lys Asp Asn Thr Ala Asn Thr Asn Leu Pro
260 265 270

His Gly Lys Lys Arg Lys Met Glu Lys Pro Ser Lys Lys Pro Met Gln
275 280 285

Thr Gln Ala Glu Asn Asp Thr Lys Glu Phe Thr Leu Thr Ile Pro Leu
290 295 300

Val Gly Arg His Asn Glu Gln Asn Val Leu Lys Tyr Cys His Asp Leu
305 310 315 320

Met Ala Gly Glu Ile Leu Arg Asn Ile Gly Asn Gly Thr Glu Gly Pro
325 330 335

Tyr Lys Ile Ala Leu Asn Lys Ile Asn Thr Leu Ile Arg Glu Ser Ser
340 345 350

Glu Trp

<210> 5

<211> 1291

<212> DNA

<213> Tribolium castaneum

<400> 5

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<210> 6
<211> 350
<212> PRT
<213> Tribolium castaneum

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<400> 6

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Phe Leu Glu Asp His Gly Leu Lys Asp Asp Val Gly Arg Ile Met His
20                25                30

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Glu Asn Asn Val His Leu Val Asn Asp Asp Gly Glu Glu Glu Lys Tyr
35                40                45

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Ser Asn Glu Ala Asn Tyr Thr Glu Ser Ile Phe Pro Pro Asp Gln Pro
50                55                60

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Thr Asn Leu Gly Thr Glu Glu Tyr Pro Gly Pro Phe Asn Phe Ser Val
65                70                75                80

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Leu Ile Ser Pro Asn Glu Gln Lys Ser Pro Trp Glu Tyr Ser Glu Lys
 85 90 95

Leu Asn Lys Ile Phe Ile Gly Ile Asn Val Lys Phe Pro Val Ala Phe
 100 105 110

Ser Val Gln Asn Arg Pro Gln Asn Leu Pro Leu Tyr Ile Arg Ala Thr
 115 120 125

Pro Val Phe Ser Gln Thr Gln His Phe Gln Asp Leu Val His Arg Cys
 130 135 140

Val Gly His Arg His Pro Gln Asp Gln Ser Asn Lys Gly Val Ala Pro
 145 150 155 160

His Ile Phe Gln His Ile Ile Arg Cys Thr Asn Asp Asn Ala Leu Tyr
 165 170 175

Phe Gly Asp Lys Asn Thr Gly Thr Arg Leu Asn Ile Val Leu Pro Leu
 180 185 190

Ala His Pro Gln Val Gly Glu Asp Val Val Lys Glu Phe Phe Gln Phe
 195 200 205

Val Cys Lys Asn Ser Cys Pro Leu Gly Met Asn Arg Arg Pro Ile Asp
 210 215 220

Val Val Phe Thr Leu Glu Asp Asn Lys Gly Glu Val Phe Gly Arg Arg
 225 230 235 240

Leu Val Gly Val Arg Val Cys Ser Cys Pro Lys Arg Asp Lys Asp Lys
 245 250 255

Glu Glu Lys Asp Met Glu Ser Ala Val Pro Pro Arg Arg Lys Lys Arg
 260 265 270

Lys Leu Gly Asn Asp Glu Arg Arg Val Val Pro Gln Gly Ser Ser Asp
 275 280 285

Asn Lys Ile Phe Ala Leu Asn Ile His Ile Pro Gly Lys Lys Asn Tyr
 290 295 300

Leu Gln Ala Leu Lys Met Cys Gln Asp Met Leu Ala Asn Glu Ile Leu
 305 310 315 320

Lys Lys Gln Glu Gln Gly Gly Asp Asp Ser Ala Asp Lys Asn Cys Tyr
 325 330 335

Asn Glu Ile Thr Val Leu Leu Asn Gly Thr Ala Ala Phe Asp
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 <211> 508
 <212> DNA
 <213> Tribolium castaneum

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 <212> PRT
 <213> Tribolium castaneum

<400> 8

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Ile Cys Ser Ile Phe Gln Leu Glu Asp Phe Lys Phe Asn Ile Asn Gln
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Ser Ser Tyr Leu Ser Ala Pro Ile Phe Pro Pro Ser Glu Pro Leu Glu
 35 40 45

Leu Cys Asn Thr Glu Tyr Pro Gly Pro Leu Asn Phe Glu Val Phe Val
 50 55 60

Asp Pro Asn Val Leu Lys Asn Pro Trp Glu Tyr Ser Pro Ile Leu Asn
65 70 75 80

Lys Ile Tyr Ile Asp Met Lys His Lys Phe Pro Ile Asn Phe Ser Val
85 90 95

Lys Lys Ala Asp Pro Glu Arg Arg Leu Phe Val Arg Val Met Pro Met
100 105 110

Phe Glu Glu Asp Arg Tyr Val Gln Glu Leu Val His Arg Cys Ile Cys
115 120 125

His Glu Gln Leu Thr Asp Pro Thr Asn His Asn Val Ser Glu Met Val
130 135 140

Ala Gln His Ile Ile Arg Cys Asp Asn Asn Asn Ala Gln Tyr Phe Gly
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Asp Lys Asn Ala Gly Lys Arg Leu Ser
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<211> 433
<212> DNA
<213> *Heliothis virescens*

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<212> PRT
<213> *Heliothis virescens*

<400> 10

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Thr Gln Ala Glu Lys Arg Val Glu Arg Cys Val Gln His Phe His Glu
 35 40 45

Ser Ser Thr Ser Gly Ile Gln Thr Glu Ile Ala Lys Asn Val Leu His
 50 55 60

Ser Ser Arg Glu Ile Gly Thr Gln Gly Val Tyr Tyr Cys Gly Lys Val
 65 70 75 80

Asp Met Ala Asp Ser Trp Tyr Ser Val Leu Val Glu Phe Met Arg Thr
 85 90 95

Ser Ser Glu Ser Cys Ser His Ala Tyr Gln Phe Ser Cys Lys Asn Ser
 100 105 110

Cys Ala Thr Gly Ile Asn Arg Arg Ala Ile Ala Ile Ile Phe Thr Leu
 115 120 125

Glu Asp Ala Met Gly Asn Ile His Gly Arg Gln Lys Val Gly Ala Arg
 130 135 140

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 <213> Drosophila melanogaster

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 <212> DNA
 <213> Drosophila melanogaster

<400> 12
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<210> 13
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 <212> DNA
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<400> 13
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 <212> DNA
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<210> 18
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 <212> DNA
 <213> Drosophila melanogaster

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 <211> 1781
 <212> DNA
 <213> *Drosophila melanogaster*

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atccgaaccc	acgtccccga
	120
gccgatgtcg	cggcggaat
agagcgattc	gcagtccaaa
cacgatgata	aacccattg
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catccgagtc	ggaggccatc
aattcggcca	cctatgtgga
caactatata	gattcgggtg
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aaaatctgcc	ggacgacgtg
cagcgccagt	tgtcacgcat
ccgcgacata	gacgtccagt
	300
acagaggcct	cattcgcgac
gtagaccact	actacgacct
gtatctgtcc	ctgcagaact
	360
ccgcggatgc	cggcgacgg
tctcgaagca	tctccaggat
gcaccagagt	ctcattcagg
	420
cgcaggaact	ggcgacgaa
aaaatgcaga	tcgtcaatca
tatgcaggag	ataatcgacg
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<210> 20
<211> 433
<212> PRT
<213> *Drosophila melanogaster*

<400> 20

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Tyr Val Asp Asn Tyr Ile Asp Ser Val Glu Asn Leu Pro Asp Asp Val
20 25 30

Gln Arg Gln Leu Ser Arg Ile Arg Asp Ile Asp Val Gln Tyr Arg Gly
 35 40 45

Leu Ile Arg Asp Val Asp His Tyr Tyr Asp Leu Tyr Leu Ser Leu Gln
 50 55 60

Asn Ser Ala Asp Ala Gly Arg Arg Ser Arg Ser Ile Ser Arg Met His
 65 70 75 80

Gln Ser Leu Ile Gln Ala Gln Glu Leu Gly Asp Glu Lys Met Gln Ile
 85 90 95

Val Asn His Met Gln Glu Ile Ile Asp Gly Lys Leu Arg Gln Leu Asp
 100 105 110

Thr Asp Gln Gln Asn Leu Asp Leu Lys Glu Asp Arg Asp Arg Tyr Ala
 115 120 125

Leu Leu Asp Asp Gly Thr Pro Ser Lys Leu Gln Arg Leu Gln Ser Pro
 130 135 140

Met Arg Glu Gln Gly Asn Gln Ala Gly Thr Gly Asn Gly Gly Leu Asn
 145 150 155 160

Gly Asn Gly Leu Leu Ser Ala Lys Asp Leu Tyr Ala Leu Gly Gly Tyr
 165 170 175

Ala Gly Gly Val Val Pro Gly Ser Asn Ala Met Thr Ser Gly Asn Gly
 180 185 190

Gly Gly Ser Thr Pro Asn Ser Glu Arg Ser Ser His Val Ser Asn Gly
 195 200 205

Gly Asn Ser Gly Ser Asn Gly Asn Ala Ser Gly Gly Gly Gly Gly Glu
 210 215 220

Leu Gln Arg Thr Gly Ser Lys Arg Ser Arg Arg Arg Asn Glu Ser Val
 225 230 235 240

Val Asn Asn Gly Ser Ser Leu Glu Met Gly Gly Asn Glu Ser Asn Ser
 245 250 255

Ala Asn Glu Ala Ser Gly Ser Gly Gly Gly Ser Gly Glu Arg Lys Ser
 260 265 270

Ser Leu Gly Gly Ala Ser Gly Ala Gly Gln Gly Arg Lys Ala Ser Leu
 275 280 285

Gln Ser Ala Ser Gly Ser Leu Ala Ser Gly Ser Ala Ala Thr Ser Ser
 290 295 300

Gly Ala Ala Gly Gly Gly Gly Ala Asn Gly Ala Gly Val Val Gly Gly
 305 310 315 320

Asn Asn Ser Gly Lys Lys Lys Lys Arg Lys Val Arg Gly Ser Gly Ala
 325 330 335

Ser Asn Ala Asn Ala Ser Thr Arg Glu Glu Thr Pro Pro Pro Glu Thr
 340 345 350

Ile Asp Pro Asp Glu Pro Thr Tyr Cys Val Cys Asn Gln Ile Ser Phe
 355 360 365

Gly Glu Met Ile Leu Cys Asp Asn Asp Leu Cys Pro Ile Glu Trp Phe
 370 375 380

His Phe Ser Cys Val Ser Leu Val Leu Lys Pro Lys Gly Lys Trp Phe
 385 390 395 400

Cys Pro Asn Cys Arg Gly Glu Arg Pro Asn Val Met Lys Pro Lys Ala
 405 410 415

Gln Phe Leu Lys Glu Leu Glu Arg Tyr Asn Lys Glu Lys Glu Glu Lys
 420 425 430

Thr

<210> 21
 <211> 2666
 <212> DNA
 <213> Drosophila melanogaster

<400> 21
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agaattcagc	aaagcgctct	gtccacctac	catcgcttgg	atgcggtcaa	cgggctgtcc	240
accagcgagg	cagatgccca	ggagtggctg	tgttgcgccg	tctacagcga	actgcagcgc	300
tcgaagatgc	gcatatttag	ggagtccatc	aacgaggcaa	acgattcggg	ggccaagaac	360
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<210> 22
 <211> 556
 <212> PRT
 <213> *Drosophila melanogaster*

<400> 22

Met Asp Leu Leu Phe Val Asn Ala Leu Glu Val Pro Arg Ser Val Val
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Ile Arg Arg Glu Phe Ser Gly Val Pro Lys Asn Trp Asp Thr Glu Asp
 20 25 30

Phe Asn Pro Ile Leu Leu Asn Lys Tyr Ser Val Leu Glu Ala Leu Gly
 35 40 45

Glu Leu Ile Pro Glu Leu Pro Ala Lys Gly Val Val Gln Met Lys Asn
 50 55 60

Ala Phe Phe His Lys Ala Leu Ile Met Leu Tyr Met Asp His Ser Leu
 65 70 75 80

Val Gly Asp Asp Thr His Met Arg Glu Ile Ile Lys Glu Gly Met Leu
 85 90 95

Asp Ile Asn Leu Glu Asn Leu Asn Arg Lys Tyr Thr Asn Gln Val Ala
 100 105 110

Asp Ile Ser Glu Met Asp Glu Arg Val Leu Leu Ser Val Gln Gly Ala
 115 120 125

Ile Glu Thr Lys Gly Asp Ser Pro Lys Ser Pro Gln Leu Ala Phe Gln
 130 135 140

Thr Ser Ser Ser Pro Ser His Arg Lys Leu Ser Thr His Asp Leu Pro
 145 150 155 160

Ala Ser Leu Pro Leu Ser Ile Ile Lys Ala Phe Pro Lys Lys Glu Asp
 165 170 175

Ala Asp Lys Ile Val Asn Tyr Leu Asp Gln Thr Leu Glu Glu Met Asn
 180 185 190

Arg Thr Phe Thr Met Ala Val Lys Asp Phe Leu Asp Ala Lys Leu Ser
 195 200 205

Gly Lys Arg Phe Arg Gln Ala Arg Gly Leu Tyr Tyr Lys Tyr Leu Gln
 210 215 220

Lys Ile Leu Gly Pro Glu Leu Val Gln Lys Pro Gln Leu Lys Ile Gly
 225 230 235 240

Gln Leu Met Lys Gln Arg Lys Leu Thr Ala Ala Leu Leu Ala Cys Cys
 245 250 255

Leu Glu Leu Ala Leu His Val His His Lys Leu Val Glu Gly Leu Arg
 260 265 270

Phe Pro Phe Val Leu His Cys Phe Ser Leu Asp Ala Tyr Asp Phe Gln
 275 280 285

Lys Ile Leu Glu Leu Val Val Arg Tyr Asp His Gly Phe Leu Gly Arg
 290 295 300

Glu Leu Ile Lys His Leu Asp Val Val Glu Glu Met Cys Leu Glu Ser
 305 310 315 320

Leu Ile Phe Arg Lys Ser Ser Gln Leu Trp Trp Glu Leu Asn Gln Arg
325 330 335

Leu Pro Arg Tyr Lys Glu Val Asp Ala Glu Thr Glu Asp Lys Glu Asn
340 345 350

Phe Ser Thr Gly Ser Ser Ile Cys Leu Arg Lys Phe Tyr Gly Leu Ala
355 360 365

Asn Arg Arg Leu Leu Leu Leu Cys Lys Ser Leu Cys Leu Val Asp Ser
370 375 380

Phe Pro Gln Ile Trp His Leu Ala Glu His Ser Phe Thr Leu Glu Ser
385 390 395 400

Ser Arg Leu Leu Arg Asn Arg His Leu Asp Gln Leu Leu Leu Cys Ala
405 410 415

Ile His Leu His Val Arg Leu Glu Lys Leu His Leu Thr Phe Ser Met
420 425 430

Ile Ile Gln His Tyr Arg Arg Gln Pro His Phe Arg Arg Ser Ala Tyr
435 440 445

Arg Glu Val Ser Leu Gly Asn Gly Gln Thr Ala Asp Ile Ile Thr Phe
450 455 460

Tyr Asn Ser Val Tyr Val Gln Ser Met Gly Asn Tyr Gly Arg His Leu
465 470 475 480

Glu Cys Ala Gln Thr Arg Lys Ser Leu Glu Glu Ser Gln Ser Ser Val
485 490 495

Gly Ile Leu Thr Glu Asn Asn Phe Gln Arg Ile Glu His Glu Ser Gln
500 505 510

His Gln His Ile Phe Thr Ala Pro Ser Gln Gly Met Pro Lys Trp Leu
515 520 525

Leu Leu Gln Ser Ser Thr Phe Ile Ser Arg Arg Ile Thr Thr Phe Leu
530 535 540

Ala Lys Leu Ala Gln Arg Lys Ala Cys Cys Phe Glu
545 550 555

<210> 23
<211> 9
<212> PRT
<213> Any Insect

<400> 23

Arg Ile Cys Ser Cys Pro Lys Arg Asp
1 5

<210> 24
<211> 9
<212> PRT
<213> Any Insect

<400> 24

Lys Ile Cys Ser Cys Pro Lys Arg Asp
1 5

<210> 25
<211> 9
<212> PRT
<213> Any Insect

<400> 25

Arg Val Cys Ser Cys Pro Lys Arg Asp
1 5

<210> 26
<211> 9
<212> PRT
<213> Any Insect

<400> 26

Lys Val Cys Ser Cys Pro Lys Arg Asp
1 5

<210> 27
<211> 9
<212> PRT
<213> Any Insect

<400> 27

Arg Ile Cys Thr Cys Pro Lys Arg Asp
1 5

<210> 28

<211> 9
<212> PRT
<213> Any Insect

<400> 28

Lys Ile Cys Thr Cys Pro Lys Arg Asp
1 5

<210> 29
<211> 9
<212> PRT
<213> Any Insect

<400> 29

Arg Val Cys Thr Cys Pro Lys Arg Asp
1 5

<210> 30
<211> 9
<212> PRT
<213> Any Insect

<400> 30

Lys Val Cys Thr Cys Pro Lys Arg Asp
1 5

<210> 31
<211> 7
<212> PRT
<213> Any Insect

<220>
<221> misc_feature
<222> (2)..(2)
<223> "X" is any amino acid

<400> 31

Phe Xaa Cys Lys Asn Ser Cys
1 5

<210> 32
<211> 7
<212> PRT
<213> Any Insect

<220>
<221> misc_feature
<222> (2)..(2)

<223> "X" is any amino acid

<400> 32

Phe Xaa Cys Gln Asn Ser Cys
1 5

<210> 33

<211> 393

<212> PRT

<213> Homo sapiens

<400> 33

Met Glu Glu Pro Gln Ser Asp Pro Ser Val Glu Pro Pro Leu Ser Gln
1 5 10 15

Glu Thr Phe Ser Asp Leu Trp Lys Leu Leu Pro Glu Asn Asn Val Leu
20 25 30

Ser Pro Leu Pro Ser Gln Ala Met Asp Asp Leu Met Leu Ser Pro Asp
35 40 45

Asp Ile Glu Gln Trp Phe Thr Glu Asp Pro Gly Pro Asp Glu Ala Pro
50 55 60

Arg Met Pro Glu Ala Ala Pro Arg Val Ala Pro Ala Pro Ala Ala Pro
65 70 75 80

Thr Pro Ala Ala Pro Ala Pro Ala Pro Ser Trp Pro Leu Ser Ser Ser
85 90 95

Val Pro Ser Gln Lys Thr Tyr Gln Gly Ser Tyr Gly Phe Arg Leu Gly
100 105 110

Phe Leu His Ser Gly Thr Ala Lys Ser Val Thr Cys Thr Tyr Ser Pro
115 120 125

Ala Leu Asn Lys Met Phe Cys Gln Leu Ala Lys Thr Cys Pro Val Gln
130 135 140

Leu Trp Val Asp Ser Thr Pro Pro Pro Gly Thr Arg Val Arg Ala Met
145 150 155 160

Ala Ile Tyr Lys Gln Ser Gln His Met Thr Glu Val Val Arg Arg Cys
165 170 175

Pro His His Glu Arg Cys Ser Asp Ser Asp Gly Leu Ala Pro Pro Gln
 180 185 190

His Leu Ile Arg Val Glu Gly Asn Leu Arg Val Glu Tyr Leu Asp Asp
 195 200 205

Arg Asn Thr Phe Arg His Ser Val Val Val Pro Tyr Glu Pro Pro Glu
 210 215 220

Val Gly Ser Asp Cys Thr Thr Ile His Tyr Asn Tyr Met Cys Asn Ser
 225 230 235 240

Ser Cys Met Gly Gly Met Asn Arg Arg Pro Ile Leu Thr Ile Ile Thr
 245 250 255

Leu Glu Asp Ser Ser Gly Asn Leu Leu Gly Arg Asn Ser Phe Glu Val
 260 265 270

Arg Val Cys Ala Cys Pro Gly Arg Asp Arg Arg Thr Glu Glu Glu Asn
 275 280 285

Leu Arg Lys Lys Gly Glu Pro His His Glu Leu Pro Pro Gly Ser Thr
 290 295 300

Lys Arg Ala Leu Pro Asn Asn Thr Ser Ser Ser Pro Gln Pro Lys Lys
 305 310 315 320

Lys Pro Leu Asp Gly Glu Tyr Phe Thr Leu Gln Ile Arg Gly Arg Glu
 325 330 335

Arg Phe Glu Met Phe Arg Glu Leu Asn Glu Ala Leu Glu Leu Lys Asp
 340 345 350

Ala Gln Ala Gly Lys Glu Pro Gly Gly Ser Arg Ala His Ser Ser His
 355 360 365

Leu Lys Ser Lys Lys Gly Gln Ser Thr Ser Arg His Lys Lys Leu Met
 370 375 380

Phe Lys Thr Glu Gly Pro Asp Ser Asp
 385 390

<210> 34

<211> 363
 <212> PRT
 <213> *Xenopus laevis*

<400> 34

Met Glu Pro Ser Ser Glu Thr Gly Met Asp Pro Pro Leu Ser Gln Glu
 1 5 10 15

Thr Phe Glu Asp Leu Trp Ser Leu Leu Pro Asp Pro Leu Gln Thr Val
 20 25 30

Thr Cys Arg Leu Asp Asn Leu Ser Glu Phe Pro Asp Tyr Pro Leu Ala
 35 40 45

Ala Asp Met Thr Val Leu Gln Glu Gly Leu Met Gly Asn Ala Val Pro
 50 55 60

Thr Val Thr Ser Cys Ala Val Pro Ser Thr Asp Asp Tyr Ala Gly Lys
 65 70 75 80

Tyr Gly Leu Gln Leu Asp Phe Gln Gln Asn Gly Thr Ala Lys Ser Val
 85 90 95

Thr Cys Thr Tyr Ser Pro Glu Leu Asn Lys Leu Phe Cys Gln Leu Ala
 100 105 110

Lys Thr Cys Pro Leu Leu Val Arg Val Glu Ser Pro Pro Pro Arg Gly
 115 120 125

Ser Ile Leu Arg Ala Thr Ala Val Tyr Lys Lys Ser Glu His Val Ala
 130 135 140

Glu Val Val Lys Arg Cys Pro His His Glu Arg Ser Val Glu Pro Gly
 145 150 155 160

Glu Asp Ala Ala Pro Pro Ser His Leu Met Arg Val Glu Gly Asn Leu
 165 170 175

Gln Ala Tyr Tyr Met Glu Asp Val Asn Ser Gly Arg His Ser Val Cys
 180 185 190

Val Pro Tyr Glu Gly Pro Gln Val Gly Thr Glu Cys Thr Thr Val Leu
 195 200 205

Tyr Asn Tyr Met Cys Asn Ser Ser Cys Met Gly Gly Met Asn Arg Arg
 210 215 220

Pro Ile Leu Thr Ile Ile Thr Leu Glu Thr Pro Gln Gly Leu Leu Leu
 225 230 235 240

Gly Arg Arg Cys Phe Glu Val Arg Val Cys Ala Cys Pro Gly Arg Asp
 245 250 255

Arg Arg Thr Glu Glu Asp Asn Tyr Thr Lys Lys Arg Gly Leu Lys Pro
 260 265 270

Ser Gly Lys Arg Glu Leu Ala His Pro Pro Ser Ser Glu Pro Pro Leu
 275 280 285

Pro Lys Lys Arg Leu Val Val Val Asp Asp Asp Glu Glu Ile Phe Thr
 290 295 300

Leu Arg Ile Lys Gly Arg Ser Arg Tyr Glu Met Ile Lys Lys Leu Asn
 305 310 315 320

Asp Ala Leu Glu Leu Gln Glu Ser Leu Asp Gln Gln Lys Val Thr Ile
 325 330 335

Lys Cys Arg Lys Cys Arg Asp Glu Ile Lys Pro Lys Lys Gly Lys Lys
 340 345 350

Leu Leu Val Lys Asp Glu Gln Pro Asp Ser Glu
 355 360

<210> 35
 <211> 564
 <212> PRT
 <213> Loligo forbesi

<400> 35

Met Ser Gln Gly Thr Ser Pro Asn Ser Gln Glu Thr Phe Asn Leu Leu
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Trp Asp Ser Leu Glu Gln Val Thr Ala Asn Glu Tyr Thr Gln Ile His
 20 25 30

Glu Arg Gly Val Gly Tyr Glu Tyr His Glu Ala Glu Pro Asp Gln Thr
 35 40 45

Ser Leu Glu Ile Ser Ala Tyr Arg Ile Ala Gln Pro Asp Pro Tyr Gly
50 55 60

Arg Ser Glu Ser Tyr Asp Leu Leu Asn Pro Ile Ile Asn Gln Ile Pro
65 70 75 80

Ala Pro Met Pro Ile Ala Asp Thr Gln Asn Asn Pro Leu Val Asn His
85 90 95

Cys Pro Tyr Glu Asp Met Pro Val Ser Ser Thr Pro Tyr Ser Pro His
100 105 110

Asp His Val Gln Ser Pro Gln Pro Ser Val Pro Ser Asn Ile Lys Tyr
115 120 125

Pro Gly Glu Tyr Val Phe Glu Met Ser Phe Ala Gln Pro Ser Lys Glu
130 135 140

Thr Lys Ser Thr Thr Trp Thr Tyr Ser Glu Lys Leu Asp Lys Leu Tyr
145 150 155 160

Val Arg Met Ala Thr Thr Cys Pro Val Arg Phe Lys Thr Ala Arg Pro
165 170 175

Pro Pro Ser Gly Cys Gln Ile Arg Ala Met Pro Ile Tyr Met Lys Pro
180 185 190

Glu His Val Gln Glu Val Val Lys Arg Cys Pro Asn His Ala Thr Ala
195 200 205

Lys Glu His Asn Glu Lys His Pro Ala Pro Leu His Ile Val Arg Cys
210 215 220

Glu His Lys Leu Ala Lys Tyr His Glu Asp Lys Tyr Ser Gly Arg Gln
225 230 235 240

Ser Val Leu Ile Pro His Glu Met Pro Gln Ala Gly Ser Glu Trp Val
245 250 255

Val Asn Leu Tyr Gln Phe Met Cys Leu Gly Ser Cys Val Gly Gly Pro
260 265 270

Asn Arg Arg Pro Ile Gln Leu Val Phe Thr Leu Glu Lys Asp Asn Gln

275					280					285						
Val	Leu	Gly	Arg	Arg	Ala	Val	Glu	Val	Arg	Ile	Cys	Ala	Cys	Pro	Gly	
290					295					300						
Arg	Asp	Arg	Lys	Ala	Asp	Glu	Lys	Ala	Ser	Leu	Val	Ser	Lys	Pro	Pro	
305					310					315					320	
Ser	Pro	Lys	Lys	Asn	Gly	Phe	Pro	Gln	Arg	Ser	Leu	Val	Leu	Thr	Asn	
325					330					335						
Asp	Ile	Thr	Lys	Ile	Thr	Pro	Lys	Lys	Arg	Lys	Ile	Asp	Asp	Glu	Cys	
340					345					350						
Phe	Thr	Leu	Lys	Val	Arg	Gly	Arg	Glu	Asn	Tyr	Glu	Ile	Leu	Cys	Lys	
355					360					365						
Leu	Arg	Asp	Ile	Met	Glu	Leu	Ala	Ala	Arg	Ile	Pro	Glu	Ala	Glu	Arg	
370					375					380						
Leu	Leu	Tyr	Lys	Gln	Glu	Arg	Gln	Ala	Pro	Ile	Gly	Arg	Leu	Thr	Ser	
385					390					395					400	
Leu	Pro	Ser	Ser	Ser	Ser	Asn	Gly	Ser	Gln	Asp	Gly	Ser	Arg	Ser	Ser	
405					410					415						
Thr	Ala	Phe	Ser	Thr	Ser	Asp	Ser	Ser	Gln	Val	Asn	Ser	Ser	Gln	Asn	
420					425					430						
Asn	Thr	Gln	Met	Val	Asn	Gly	Gln	Val	Pro	His	Glu	Glu	Glu	Thr	Pro	
435					440					445						
Val	Thr	Lys	Cys	Glu	Pro	Thr	Glu	Asn	Thr	Ile	Ala	Gln	Trp	Leu	Thr	
450					455					460						
Lys	Leu	Gly	Leu	Gln	Ala	Tyr	Ile	Asp	Asn	Phe	Gln	Gln	Lys	Gly	Leu	
465					470					475					480	
His	Asn	Met	Phe	Gln	Leu	Asp	Glu	Phe	Thr	Leu	Glu	Asp	Leu	Gln	Ser	
485					490					495						
Met	Arg	Ile	Gly	Thr	Gly	His	Arg	Asn	Lys	Ile	Trp	Lys	Ser	Leu	Leu	
500					505					510						

Asp Tyr Arg Arg Leu Leu Ser Ser Gly Thr Glu Ser Gln Ala Leu Gln
515 520 525

His Ala Ala Ser Asn Ala Ser Thr Leu Ser Val Gly Ser Gln Asn Ser
530 535 540

Tyr Cys Pro Gly Phe Tyr Glu Val Thr Arg Tyr Thr Tyr Lys His Thr
545 550 555 560

Ile Ser Tyr Leu